3GPP TSG-RAN WG2 Meeting #125 draft R2-2401542

Athens, Greece, Feb. 26th – Mar. 1st, 2024

Source: RAN2 Vice Chairman (CATT)

Title: Report from session on NR MIMO evolution and Multi-SIM

## Status of At-Meeting Email Discussions

This subclause is not an Agenda Item. It contains a running summary of the email discussions assigned to take place during the meeting weeks.

* [AT125][200] Organizational – NR MIMO evolution and Multi-SIM (RAN2 VC)

**Scope**:

* + - Share plans and list of ongoing email discussions for the related sessions
		- Share meetings notes and agreements for review and endorsement

## 7.17 Dual Transmission Reception (TxRx) Multi-SIM for NR

(NR\_DualTxRx\_MUSIM-Core; leading WG: RAN2; REL-18; WID: [RP-233071](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_100/Docs/RP-231461.zip))

Time budget: 0 TU

Tdoc Limitation: 3 tdocs

### 7.17.1 Organizational

Rapporteur input, i.e., WI/Spec Rapporteur(s) are invited to provide updated open issues lists that need to be handled.

Incoming LS.

Corrections to TS 38.300.

R2-2401065 Correction on NR MUSIM enhancements vivo CR Rel-18 38.331 18.0.0 4583 - B NR\_DualTxRx\_MUSIM-Core

* Endorsed, will be updated in post meeting email discussion

R2-2401066 [POST124][MUSIM][38331] Open Issue list(vivo) vivo other Rel-18 NR\_DualTxRx\_MUSIM-Core

* Noted

R2-2401251 Corrections to TS 38.300 for R18 MUSIM China Telecom, Huawei, HiSilicon CR Rel-18 38.300 18.0.0 0801 - A NR\_DualTxRx\_MUSIM-Core

* Noted, will be discussed again in the CB session, to see if post meeting email disc is needed or not.

R2-2401551 Corrections to TS 38.300 for R18 MUSIM China Telecom, Huawei, HiSilicon CR Rel-18 38.300 18.0.0 0801 1 F NR\_DualTxRx\_MUSIM-Core

* Agreed

R2-2401067 RILs\_conclusion\_MUSIM vivo other Rel-18 NR\_DualTxRx\_MUSIM-Core

*PropAgree: W001, C007, P001, S856, W002, H036, C011, H037, C013, C014, C015, C016, C017, C019, C020, H038, H039, O103, H040, H041, C022, I147, H042, H043, H820, S855*

*PropReject: Z101, C010, P002, C012, C021, C025*

*Disc: S857, H035, Z102, O100, O101, S853, S852, Q623, O102, Q622, S858, S851, S854*

- Samsung think C007 needs further discussion; also thinks that H037 and C013 are for the same issue.

- ZTE want to further discuss Z101, vivo do not see a strong need.

* Agree: RILs with status PropAgree are agreed, except for the following: C007 is moved to Disc, C013 is rejected, C019 is moved to Disc.
* RILs with status PropReject are rejected.
* RIL list will be updated in post meeting email discussion

R2-2401068 Discussion on RILs conclusion\_MUSIM vivo other Rel-18 NR\_DualTxRx\_MUSIM-Core

* Noted
* [Post125][201][MUSIM] RRC CR and RIL list for MUSIM (vivo)

**Scope**: Update and review the RRC CR and RIL list based on the agreements in the meeting

**Intended outcome**: Agreed CR in R2-2401553, and RIL list in R2-2401554

**Deadline**: 1 week

### 7.17.2 RRC

Corrections to RRC (other than UE capabilties, which should be submitted to 7.17.3).

Discussions and propsoals on the RRC open issues if listed by Rapporteur(s) or triggered by LSs, etc.

Issue 1, Network’s action upon receiving of the early indication

R2-2401015 Considerations on Open issues for R18 MUSIM LG Electronics discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 1. For the case of the reception of the early Indication, the network does not require to specify additional actions into the spec.*

R2-2401341 Discussion on remaining MUSIM open issues Ericsson discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 1 After received the restricted capability indication in RRCSetupRequest, the NW configures the UE using a limited configuration that is used until network sends RRCReconfiguration based on the actual restricted UE capabilities listed in UEAssistanceInformation.*

*Proposal 2 Add a note in TS 38.331 as described in Appendix A, to cover the limited configuration used after RRC establishment until UAI indicated the restricted capabilities.*

Discussions based on the contribution(s) above:

* Xiaomi think some texts are useful, HW agrees. QC think it is useful and it is not requirement but still says up to nw impl. Intel agrees as well.
* OPPO think the definition of the early indc is quite clear so perhaps no need for the note.
* Add a note in TS 38.331, taking the TP in R2-2401341 as baseline. Exact wording of the note can be further discussed in the post meeting email.

Issue 3, Whether when a band combination is indicated as forbidden, the fallback combinations of the reported band combination can be considered as forbidden, i.e., Fallback relationship of the forbidden BC and affected BC

Issue 4, FFS whether UE should start a timer, e.g., Timer T348, after UE submits preference on the measurement gap requirement information.

Issue 7, How to understand the relation between MIMO/BW and CCs within the band, and whether the reactive timer or the proactive timer shall be used for the musim-MaxCC reporting

R2-2401069 Discussion on the remaining issue of MUSIM temporary capability restriction vivo discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 1 For MUSIM capability restriction reporting, each forbidden BC should be indicated explicitly, i.e., neither its fallback BC or parent BC can be considered as forbidden.*

*Proposal 2 The UE should start the timer T348 (i.e., prohibit timer) after submits preference on the measurement gap requirement information via UAI.*

*Proposal 7 Maximum MIMO/Bandwidth within a band means the maximum MIMO/Bandwidth on each CC within this band.*

*Proposal 8 Prohibit timer is applied to the musim-MaxCC reporting.*

R2-2400593 Discussion on open issues for temporary capability restriction Huawei, HiSilicon discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 4: The restricted maximum MIMO layer reported in the UAI indicates the maximum per-CC level MIMO layer which is common for all the contiguous CCs in one band entry.*

*Proposal 5: For the reported forbidden/affected band combinations in the UAI, their fallback combinations should not be considered as forbidden/affected band/band combination. In other words, for the reported forbidden/affected band combinations in the UAI, if their fallback combinations are also forbidden/affected, the UE should explicitly report each of them.*

*Proposal 6: All the higher-order combinations that include the reported lower-order restricted/forbidden band combination should be considered as forbidden/restricted.*

*Proposal 7: To support maximum number of CCs at least in per-CG level without additional impacts on MN-SN coordination. To further discuss to support maximum number of CCs in per-CG per-FR level.*

*Proposal 8: UE starts the prohibit timer T346n if initiates transmission of the UAI message to provide maximum number of CCs.*

*Proposal 9: UE starts the wait timer T348 if initiates transmission of the UAI message to provide measurement gap requirement information.*

Discussions based on the contribution(s) above:

OI3:

* For parent BC, QC and Huawei agree with HW view. Xiaomi support vivo proposal as it is only signalling optimization, Nokia agrees as well.
* RRC rapp think the HW proposal on parent BC singaling only requires some description in RRC and is thus doable.
* For MUSIM capability restriction reporting, each fallback BC of a forbidden BC should be indicated explicitly regarding whether it is forbidden or not. Can further discuss the case of parent BC.

Discussions on ‘parent BC’ in CB

- ZTE think there is common view already, which is along the line of HW proposal 6.

- Samsung suggests to just go with P6 in HW contribution.

- LG E wonders if P6 and the previous agreement on ‘fallback’ contradict with each other.

* Network should consider band combination as forbidden if its lower-order band combination is reported to be forbidden.

OI4:

- QC support T348. Nokia do not think a timer is needed, QC and Samsung agree as well. HW also fine with no timer.

* No need to define a timer if initiates transmission of the UAI message to provide measurement gap requirement information.

OI7:

- QC think it is for all the CCs within this band, ZTE also think it is more practical. HW think MIMO is for each CC, and have different understanding for bandwidth, CATT agrees.

* Maximum MIMO/Bandwidth within a band means the maximum MIMO/Bandwidth on each CC within this band.

- Ericsson agree with using the prohibit timer for reporting of maximum # of CC. Samsung fine with HW proposal.

* UE starts the prohibit timer T346n if initiates transmission of the UAI message to provide maximum number of CCs.

Issue 2, UAI/Early indication processing during handover procedure

R2-2400605 Remaining issue of MUSIM temporary capability restriction NEC discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 1: The legacy handing for Rel-17 MUSIM UAI information during handover procedure is reused for temporary capability restriction of MUSIM.*

*Proposal 2: No further enhancement is needed for early indication of temporary capability restriction during handover.*

Discussions based on the contribution(s) above:

* Xiaomi support P1, and think early indication needs to be forwarded. Nokia agree. QC agree and think early indication can be added.
* LG has different understanding, and think we need to handle the timers.
* The legacy handling for Rel-17 MUSIM UAI information during handover procedure is reused for temporary capability restriction of MUSIM.
* No further enhancement is needed for early indication of temporary capability restriction during handover.
* Can discuss further any impact to the RRC specification

Open issue #5, FFS whether all fields in musim-CapRestriction should be sent to SN.

R2-2401254 Discussion on remaining open issues for MUSIM China Telecom discussion NR\_DualTxRx\_MUSIM-Core

*Proposal 4: all fields in musim-CapRestriction-r18 can be sent from MN to SN and can leave it to MN implementation to decide which field(s) need to be sent.*

R2-2401017 Remaining Issues on the Temporary Capability Reporting Procedure ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 7: For the MN-SN coordination, the musim-Cell-SCG-ToReleasedList/ musim-CellToAffectList-r18/ musim-AffectedBandsList/ musim-AvoidedBandsList of MUSIM-CapRestriction-r18 can be reused with small definition modification as below:*

*Proposal 8: RAN2 to confirm which option shall be adopted for the Max CC number coordination between the MN and SN.*

* Option 1: The MN determines the maximum allowed CC at the SN side and indicates it to the SN.*

* Option 2: The MN indicates the UE reported max CC restriction to the SN, the SN determine the maximum allowed CC at the SN side based on the legacy bandcombinationInfo/ selectedBandEntriesMNList in the MN-SN interface.*

Discussions based on the contribution(s) above:

* Samsung prefer CT proposal, since normally we do not optimize too much the inter node msg. OPPO agrees, and has a RIL related to gap related info.
* Ericsson wonders whether info related to releasing the SCG needs to be forward to the SN. CATT understands this but still think CT proposal is sufficient and there is no big issue from NW point of view.
* QC also thinks CT proposal is simple.
* ZTE wants to further understand whether CT proposal means that the MN has forward all these info the SN? Xiaomi think there is no such restriction as it is optional fields.
* All fields in musim-CapRestriction-r18 can be sent from MN to SN, i.e., it is up to MN implementation to decide which field(s) need to be sent.

Issue #6, FFS on additional info on how the network set the content of MUSIM band list filter.

R2-2400112 Discussion on remaining open issues for MUSIM CATT discussion NR\_DualTxRx\_MUSIM-Core

*Proposal 6: no additional information on how the networks set the content of MUSIM band list filter is needed.*

Discussions based on the contribution(s) above:

* HW think it is important the NW includes the bands that it intend to use for this UE. Samsung understand HW’s consideration is to include the serving frequency band.
* Ericsson, ZTE, QC support HW’s intention.
* vivo think it is also allowed that NW does not config a band in the band filter.

Discussions in CB

R2-2401552 On Issue#6 FFS on additional info on how the network set the content of MUSIM band list filter Huawei, HiSilicon discussion NR\_DualTxRx\_MUSIM-Core

- Ericsson has concern on the ‘at least’ part.

* The changes will be updated to “A list of candidate bands that the network intends to use, e.g., for serving cells, and for which the UE is requested to provide information on temporary restricted capabilities for MUSIM operation as described in 5.7.4.3.”

Issue #8, A NOTE was added for early indication saying that the UE does not apply failure handling in case the UE is unable to apply part of the configuration and what the baseline configuration is, the similar issue may also occur after UE enters RRC\_CONNECTED state, so FFS similar NOTE may be needed for RRC Reconfiguration.

R2-2401036 Remaining consideration on MUSIM early indication DENSO CORPORATION discussion NR\_DualTxRx\_MUSIM-Core

*Proposal 1: RAN2 to clarify the UE behavior if the UE is unable to apply “limited configuration” due to MUSIM capability restriction on receiving RRCReconfiguration just after entering RRC\_CONNECTED*

*Proposal 2: A NOTE would be added to clarify the UE behavior that UE does not need to go to failure handling immediately even if the UE is unable to apply part of “limited configuration” on receiving RRCReconfigration just after entering RRC\_CONNECTED*

Discussions based on the contribution(s) above:

* Nokia do not support to add note to RRC reconfiguration, and want the UE to follow the normal legacy behaviour. OPPO also think this is not a common case and there are existing procedures. Ericsson, Samsung also do not think this is needed.
* QC think adding this note is useful. Huawei agrees.
* QC think it is also related to HO case, and think we already agreed not to forward early ind.
* HW suggests to keep this one, to allow more time to think.

RILs with status Disc: C007, C019, S857, H035, Z102, O100, O101, S853, S852, Q623, O102, Q622, S858, S851, S854

R2-2401071 [C010][Z102]Discussion on musim-GapProhibitTimer vivo discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

- CATT explains that these two issues are for the same issue but with different solutions.

- Samsung OK with the proposal 1 but has suggestions to TP, which can be handled later.

- ZTE support P1 and has TP also along the same line.

* Keep RAN2 agreement that the prohibit timer configuration for R17 MUSIM gap preference (i.e. musim-GapProhibitTimer) is also apply to R18 MUSIM gap priority preference. Exact changes will be discussed in post meeting email disc.

R2-2401180 Discussion on Q622 and Q623 Qualcomm Incorporated discussion

Q622:

- CATT think the cell index can address any cell in MN and SN, and it is related to C019

- Samsung suggest to move C019 to PropAgree. QC is fine with this but think at least the filed description is needed.

- QC wants whether this signalling also covers PScell, Ericssion think yes.

* Q622 is rejected.
* C019 is agreed.
* Further discuss changes to the field description of ServCellIndex, to indicate the singaling is used to address any serving cell(s), except for the PCell.

Q623:

- Samsung think this is not correction, and may require new UE cap, so not sure how to implement it. HW think we already have the filter to reduce the overhead so the need is not so strong.

* Q623 is rejected.

R2-2400619 [RIL-S852] Remaining issues for Musim-NeedForGaps Samsung discussion

- Nokia wonders whether intra freq gap really impact MU-SIM UAI report.

* P1 and P2 is agreed in principle, TP1 is taken as baseline. Exact wording will be discussed in the post meeting email, if needed.
* P4 and P5 are postponed.

R2-2400776 [S857] Start / Restart Wait Timer for UAI during HO and CHO Samsung discussion Rel-18

- LG E is fine with the proposal, but want to further discuss the HO case.

- Samsung think it is agreeable, and other issues if any can be discussed later.

* S857 is agreed.

R2-2400546 [H035] Discussion on Early Indication for Resume Request with no configuration Huawei, HiSilicon discussion Rel-18

- ZTE, QC support this RIL.

* H035 is agreed.

R2-2401193 Discussion on S858, Z101, C007 Samsung Electronics Czech discussion Rel-18 38.331 NR\_DualTxRx\_MUSIM-Core

S858, Z101, C007:

- Samsung think these are agreeable, CATT, ZTE agree.

* S858 and C007 are agreed.
* TP in the appendix is taking as baseline.

R2-2401013 [RIL-S853] No capability restriction in first UAI after early indication Samsung, Huawei, HiSilicon discussion

- QC think it is new behaviour for UE and NW. CATT agree. vivo think this is rare case.

- RRC Rapporteur confirms that this is new discussion rather than correction.

- ZTE support the proposal

* S853 is rejected.

R2-2400618 [RIL-S851] Capability restriction and RRC Reestablishment Samsung discussion

- HW think we do not have such special handling for existing UAI so do not see a need. ZTE agree.

- Nokia think this is new proposal and requires more discussions.

- Samsung ask whether Option B is acceptable (i.e., c. UE includes an indication similar to early indication in RRCReestablishmentComplete.). QC agree. LG do not see a need for this.

* S851 is rejected.

R2-2400114 [O100] Discussion on Timer T346n OPPO discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

* O100 is rejected.

R2-2400115 [O101] Discussion on Reporting Maximum Number of CC OPPO discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

- OPPO suggests to focus on P1.

- Samsung think the TP has some issue, as the timer does not applies for every case.

* P1 is agreeable, exact wording can be reviewed in post meeting email disc

R2-2400116 [O102] Discussion on Need for Gap Requirements for MUSIM Purpose OPPO discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

- vivo do not want to change the ASN part, and think procedure can be made clearer.

- Samsung think we just reject it and open to discuss the procedural text in the next meeting.

* O102 is rejected.

R2-2401495 [RIL-Z102] MUSIM Gap UAI Processing ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core Late

- ZTE suggest to focus on the 2nd change, regarding how to report the gap info. OPPO, Samsung fine with the 2nd change.

* Z102 is agreed, and the 2nd change (i.e., for 5.7.4.3) is agreeable.

R2-2400545 Discussion on open issue for early indication Huawei, HiSilicon discussion Rel-18

R2-2400594 Discussion on open issues in NR-DC and Handover Huawei, HiSilicon discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

R2-2401018 Remaining Issues on the Temporary Capability Reporting ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

R2-2401019 Remaining Issues on the MUSIM Gap ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

R2-2401038 Further discussion on Rel-17 MUSIM UAI and Rel-18 UAI Interworking Nokia, Nokia Shanghai Bell discussion

R2-2401039 Temporary capability restriction related open issues Nokia, Nokia Shanghai Bell discussion

R2-2401040 Additional capability restrictions related to measurement gaps Nokia, Nokia Shanghai Bell discussion

R2-2401070 Discussion on the remaining issue of MUSIM early indication vivo discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

R2-2401190 InterNode communictaion for temporary capability restrictions [S854] [OI5][OI6] Samsung discussion

R2-2401192 Discussion on temporary capability restriction and handover [OI2] Samsung discussion

R2-2401197 Discussion on compliance check in RRCReconfiguration for MUSIM Samsung Electronics Czech discussion Rel-18 38.331 NR\_DualTxRx\_MUSIM-Core

R2-2401340 Open issues on MUSIM Band restrictions Ericsson discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

### 7.17.3 Other

UE capabilities red corrections.

Corrections to TS 37.340.

Other issues if not covered by the previous agenda items.

R2-2401339 Modification of UE capability for MUSIM Ericsson discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

* Noted

- Intel thinks the UE capability can not be updated dynamically.

- QC think we do not need to indicate ‘USIM’ in capability, and do not see need to this.

- Samsung think this is no needed. HW share this view.

## 7.20 NR MIMO evolution

(NR\_MIMO\_evo\_DL\_UL-Core; leading WG: RAN1; REL-18; WID: [RP-233028](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_98e/Docs/RP-223276.zip))

Time budget: 0TU

Tdoc Limitation: 3 tdoc

### 7.20.1 Organizational

Rapporteur input, i.e., WI/Spec Rapporteur(s) are invited to provide updated open issues lists that need to be handled.

Incoming LS.

Stage 2 corrections.

R2-2400013 LS to RAN2 on TDCP for Rel-18 MIMO (R1-2312382; contact: Samsung) RAN1 LS in Rel-18 NR\_MIMO\_evo\_DL\_UL To:RAN2

- Samsung point out that this has been handled in the last meeting.

* Noted

R2-2401328 Open issue list for MIMO evolution NTT DOCOMO, INC. discussion Rel-18

* Noted

R2-2400601 Correction to MIMO Evolution Ericsson CR Rel-18 38.331 18.0.0 4539 - F NR\_MIMO\_evo\_DL\_UL-Core

* Endorsed, will be updated in post meeting email discussion

R2-2400600 RIL List v212 Ericsson discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

*PropAgree: I124, C500, S951, C501, S897, H070, S889, S890, S891, S892, E058, S893, S894, C510, C502, S874, I137, I139, I140, S876, S877, E062, H046, S895, C504, S878, S879, S880, S881, I305, S882, S883, C505, C506, Z183, Z184, C508, Z181, C509, E064, I307, H045 (related to tag-Id, tag2-Id), S885, I309, F007, Z185*

*PropReject: I122, S871, I126, S900, H045 (related to aperiodicResourceOffset), S872, S873, I141, V100, V101, H047, C507, S884, I308, S887, S888*

*Todo: C503, C511*

*Duplicate: Z182 (covered by C505)*

- Samsung wants to further discuss S900. HW do not see a need to further discuss.

- CATT wants to further discuss C507, and think it is agreeable.

* RILs with status PropAgree are agreed
* RILs with status PropReject/Duplicate are rejected, excepting for the following: C507 is moved to Todo.
* RIL list will be updated in post meeting email discussion

Further discussions based on the RIL list

* C503 is agreed.

Further discussions based on the RIL list in the CB

C511

- Samsung think S871 is also related to C511, and propose to revert the decision for S871.

* C511 is agreed. Exact changes can be reviewed in the post meeting email disc.

C507

- Ericsson think this is agreeable, and think if we agree C507 we can just reject Z183.

* C507 is agreed. Z183 is changed to ‘Rejected’
* [Post125][202][MIMOevo] MAC CR for MIMOevo (Samsung)

**Scope**: Update and review the MAC based on the agreements in the meeting

**Intended outcome**: Agreed CR in R2-2401555

**Deadline**: 1 week

* [Post125][203][MIMOevo] RRC CR and RIL list for MIMOevo (Ericsson)

**Scope**: Update and review the RRC CR and RIL list based on the agreements in the meeting

**Intended outcome**: Agreed CR in R2-2401556, and RIL list in R2-2401557

**Deadline**: 1 week

### 7.20.2 MAC

Corrections to MAC.

Discussions and propsoals on the open issues if listed by Rapporteur(s) or triggered by LSs, ect..

MTTD issue for PTAGs

R2-2400163 Discussion on the UE behaviors for the MTTD issue for 2 PTAGs Xiaomi discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

*Proposal 1: The MAC entity stops uplink transmission associated to a PTAG for SpCell configured with two TAGs, when the MTTD issue happens between the two PTAGs of the SpCell.*

*Proposal 2: The text proposal is adopted for the MTTD issue of two PTAGs of the SpCell.*

R2-2401307 TAT handling when MTTD is exceeded for PTAGs Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

*Proposal: When MTTD is exceeded among two PTAGs (same or different MAC entities), follow the legacy principle and do not consider any TAT as expired.*

Discussions based on the contribution(s) above:

* OPPO share the view from Nokia, the use case for PTAG is different and it is up to the NW. QC agree as well. ZTE, LG E agree as well.
* DCM support Xiaomi proposal, and do not think it is reasonable to keep the TAT with is out of sync.
* HW wonders whether we need any spec text if we go with Nokia proposal. Nokia says no need.
* When MTTD is exceeded among two PTAGs (same or different MAC entities), follow the legacy principle and do not consider any TAT as expired.

Overlapping UL grants handling for STxMP

R2-2401042 Remaining issues on STxMP Qualcomm Incorporated discussion NR\_MIMO\_evo\_DL\_UL-Core

*Proposal 5: RAN2 confirms that the existing rules for handling overlapping PUSCH are performed separately for each coresetpoolindex.*

*Proposal 6: The intra-UE prioritization (lch-basedPrioritization) can be configured together with STxMP unless RAN1 indicates any issues.*

Discussions based on the contribution(s) above:

* DCM is fine with the proposals.
* Samsung fine with P5. Samsung think P6 has nothing to do with R1 and it should be decided in R2. Samsung think with P6, a lot of MAC impacts are needed. ZTE share this view, do not want to spend much time to specify such complex combination.
* QC think P5 and P6 goes together and it is not very complex. CATT share the same view as QC and LG, and has TP on the issue.
* HW agree with P5 and has TP as well, not sure about P6.
* RAN2 confirms that the existing rules (when *lch-basedPrioritization* is not configured) for handling overlapping PUSCH are performed separately for each coresetpoolindex.

Chair: we can discuss P6 further. Companies are encouraged to check with their R1 colleagues whether this is already supported by R1 spec.

PHR MAC CE for sDCI mTRP STxMP

R2-2401205 Support of STxMP PHR for Single-DCI based Multiple TRP Samsung discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

*Proposal 1: Introduce the new PHR MAC CEs (single entry/multiple entry) for STxMP PHR on sDCI based mTRP operation.*

*- Baseline is multi TRP PHR MAC CEs introduced in Rel-17*

*- Two set of PH, P, V, MPE, and PCMAX*

* Add the additionally reported PCMAX,f,c,k (k is the TRP/panel index used for STxMP operation) which is corresponding to the second PH value reported from the second TRP.*

* Add the corresponding P, V and MPE fields.*

*Proposal 2: For Rel-18 STxMP PHR, the legacy PHR triggering conditions can be reused.*

*Proposal 3: STxMP PHR report is supported in NR SA, NR-DC and NE-DC simliar as Rel-17 mTRP PHR enhancements.*

*Proposal 4: The STxMP PHR MAC CE is used if PHR is triggered for a Serving Cell configured with STxMP transmission (i.e. multipanelScheme) and the MAC entity this Serving Cell belongs to is configured with twoPHRMode.*

*Proposal 5: RAN2 discuss whether to clarifiy that when multipanelScheme is configured, twoPHRmode is enabled by the NW.*

*Proposal 6: A new UE capability for STxMP PHR support is introduced.*

Discussions based on the contribution(s) above:

P1-3:

* ZTE agree with P1 in general, and wants to clarify the triggering of MPE. Samsung thinks it is R1 business.
* Introduce the new PHR MAC CEs (single entry/multiple entry) for STxMP PHR on sDCI based mTRP operation.

**- Baseline is multi TRP PHR MAC CEs introduced in Rel-17**

**- Two set of PH, P, V, MPE, and PCMAX**

** Add the additionally reported PCMAX,f,c,k (k is the TRP/panel index used for STxMP operation) which is corresponding to the second PH value reported from the second TRP.**

** Add the corresponding P, V and MPE fields**

* For Rel-18 STxMP PHR, the legacy PHR triggering conditions can be reused.
* STxMP PHR report is supported in NR SA, NR-DC and NE-DC simliar as Rel-17 mTRP PHR enhancements.
* The TP in R2-2401205 is taken as baseline.

P4:

- ZTE thinks P4 is not correct and suggest to make it right in the MAC spec drafting phase.

P6:

- Samsung think if we do not agree with P6 that means UE shall support this new PHR if it supports multi panel tx. ZTE has similar understanding and thinks single capability is sufficient. Ericsson and LG E have same view.

* No new UE capability for STxMP PHR support is introduced.

SDT related TAT handling

R2-2401048 Considerations On Remaining Issues for 2TA ZTE Corporation, Sanechips discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

*Proposal 1: In Rel-18, CG-SDT should not be configured in the RRCRelease if the PCell ,where the RRCRelease is received by a UE, is configured with 2PTAG.*

*Proposal 2: Adding a restriction in the field description of SDT-MAC-PHY-CG-Config like following: NW should not configured this field when the PCell is configured with 2PTAG.*

*Proposal 3: In the case of RRCResume is received within SDT transmission, RAN2 clarify that UE always associates the TA for the SDT transmission is applied to the PTAG with ID=0 no matter how many TAGs are configured to the target PCell. No specification change is needed.*

Discussions based on the contribution(s) above:

* OPPO share the understanding with ZTE.
* Nokia think this is for more general issue. ZTE think this is specific for SDT.
* LG E think P3 is according to the legacy behaviour and therefore no change is needed. Ericsson also agrees.

* ?? It is confirmed that the following is aligned with the legacy behaviour and there is no need for further specification: In the case of RRCResume is received within SDT transmission, RAN2 clarify that UE always associates the TA for the SDT transmission is applied to the PTAG configured with *tag-ID* no matter how many TAGs are configured to the target PCell.

Discussions in the CB

- ZTE reports that there are some offline checking with companies, and think only Samsung wants to clarify sth in the spec.

- LG E think there are two issues, 1st is about SDT procedure and configured with TA, 2nd is when UE resumes Connect. And think for the 2nd case the previosu tentative wording of agreement is OK.

Resume case

- Nokia think we do not need to do anything.

- Xiaomi agree with Nokia and think we just release the 2TA configuration. Xiaomi think during the SDT procedure, it is possible for UE to select any beam.

- LG E think with 2TA the UE behaivor is same, i.e., UE select the legacy PTAG. ZTE agree that it is already clear.

- QC prefer a simple way, which follows the legacy, and think network just release the 2TA config.

- Nokia suggest to add that ‘NW should release the 2PTAG configuration when releasing UE to RRC\_INACTIVE’. Ericsson agrees. CATT has concern.

Other MAC issues

R2-2401305 MAC issue with TAT expiry and 2TA Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

- Nokia indicates that there have been offline among the companies, and the proposal is agreeable, with some changes to the wordings. Nokia think this can be merged to the Rapportuer CR.

* Intention is agreeable, detailed wording of the TP can be further checked as part of the Rapp CR.

R2-2400246 MAC Corrections on the Unified TCI Extension to mTRP CATT, Ericsson discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

P1:

- For P1, LG E think the current text is clear, so no need. Samsung point out they have paper on the issue of P1.

- ZTE think RRC spec is already clear.

- HW think with the change the texts are better to understand.

Discussion on P1 and S872 in CB

- Samsung is fine with the change in MAC as long as the wording is aligned in RRC/MAC.

- ZTE and LG E agree with CATT P1.

- LG E think RRC needs some change as well.

- Samsung think we only need this for Rel-18. CATT think it can also be for Rel-17.

* In the CORESET Pool ID field of the Unified TCI States Activation/Deactivation MAC CE, change “If the coresetPoolIndex is not configured for any CORESET or only one coresetPoolIndex is configured for any CORESET” into “if no more than one value for the coresetPoolIndex is configured for any CORESET in the BWP”.

P2:

- LG E think for P2 is OK as it is already captured as part of legacy TCI state act. MAC CE. ZTE agree as well.

* Add the sentence of “The codepoint to which a TCI state is mapped is determined by its ordinal position among all the TCI state ID fields.” in the field description of TCI state ID of the Enhanced Unified TCI States Activation/Deactivation MAC CE for Separate TCI States.

R2-2400174 Discussion on open issue of multiple TA operation OPPO discussion Rel-18

R2-2400175 Discussion on PHR report for mTRP operation OPPO discussion Rel-18

R2-2400176 Discussion on UL grant handling for STxMP OPPO discussion Rel-18

R2-2400245 Discussion on the Listed MAC Open Issues CATT discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2400470 Discussion on left issues of two TAs for multiple TRPs SHARP Corporation discussion NR\_MIMO\_evo\_DL\_UL-Core

R2-2400581 MAC issues for STxMP Ericsson discussion Rel-18 38.321 NR\_FeMIMO-Core

R2-2400811 Remaining issues on MIMO Samsung discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2400820 MAC corrections for R18 MIMO Huawei, HiSillicon discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2400899 Remaining issues on two TAG LG Electronics Inc. discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2400900 Discussion on STxMP PHR LG Electronics Inc. discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2400901 Remaining issue on UL grant handling for STxMP LG Electronics Inc. discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2401046 Cosideration On Supporting STxMP in RAN2 ZTE Corporation, Sanechips discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2401200 Random Access problem for SpCell with two TAGs Langbo discussion Rel-18 38.321 NR\_MIMO\_evo\_DL\_UL-Core

R2-2401306 CG-SDT TAT and 2TA Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2401330 Discussion on open issues on MIMO evolution NTT DOCOMO, INC. discussion

### 7.20.3 RRC

Corrections to RRC, RILs.

Discussions and propsoals on the open issues if listed by Rapporteur(s) or triggered by LSs, ect..

RILs with status Todo: C503, C511, C507

R2-2400591 H045(on CodebookConfig-r18) Ericsson discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

* Noted, H045 already rejected.

R2-2400826 RRC RIL S872, S882, S893, S894, C506 Samsung discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

Chair: S872 is discussed in CB. S882, S893, S894 already agreed.

C506:

- Samsung think further discussion on C506 (which has been agreed) is needed.

- CATT think this needs to be further checked with RAN1.

* C506 is changed to ‘*Todo*’.

R2-2400819 RRC corrections for R18 MIMO Huawei, HiSillicon discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

- HW confirms that with further offline discussions this RIL can be rejected.

Discussions in the CB

- Xiaomi think this has been checked offline and the current change in Rapp’s CR can solve this issue.

* H070 is rejected. The issue is resolved already in the Rapp’s CR in R2-2400601

R2-2401047 Miscellneous on RRC For MIMO evo ZTE Corporation, Sanechips discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

- ZTE explains that further disc on P1 is not needed.

* Intention of P2 is agreeable, detailed change can be reviewed in the post meeting email disc.

R2-2400818 Co-existence between LTM and 2TA Huawei, HiSillicon discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

* Noted

- HW indicate that there has been discussion in the LTM session.

- ZTE think LTM session already agree to support the combination of LTM + 2TA, and think this should be discussed in the LTM session. LG E also think it is good to first discuss in the LTM.

## List of post meeting email discussions

* [Post125][201][MUSIM] RRC CR and RIL list for MUSIM (vivo)

**Scope**: Update and review the RRC CR and RIL list based on the agreements in the meeting

**Intended outcome**: Agreed CR in R2-2401553, and RIL list in R2-2401554

**Deadline**: 1 week

* [Post125][202][MIMOevo] MAC CR for MIMOevo (Samsung)

**Scope**: Update and review the MAC based on the agreements in the meeting

**Intended outcome**: Agreed CR in R2-2401555

**Deadline**: 1 week

* [Post125][203][MIMOevo] RRC CR and RIL list for MIMOevo (Ericsson)

**Scope**: Update and review the RRC CR and RIL list based on the agreements in the meeting

**Intended outcome**: Agreed CR in R2-2401556, and RIL list in R2-2401557

**Deadline**: 1 week